City of Annapolis
DEPARTMENT OF PLANNING AND ZONING
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JON ARASON, AICP
DIRECTOR

July 8, 2003

MEMORANDUM

TO: Mayor Moyer
Annapolis City Council

FROM: Jon Arason, Director of Planning & Zoning

RE: West Annapolis Parking Study

Attached you will find two reports. One is the *West Annapolis Parking Study*, done by Wells and Associates under the direction of the Department of Planning & Zoning. The other is the *Report and Recommendations to the Annapolis City Council* by the West Annapolis Parking Committee.

Background

Approximately two years ago, the City commenced a study of parking in West Annapolis. A technical report was done by Wells and Associates to assess the problems of and potential solutions to the tight parking situation in this part of our city.

During this process, two community meetings were held. The first was to gain the public's input at the beginning of the study, and the second to present the results and ask for their reaction. At the second meeting in the fall of 2002, the City agreed to convene a committee of residents and business people to work through the options presented in the Wells and Associates technical report and to make recommendations that the City could then implement.

This committee met through the fall and winter of 2002-2003 and with the help of staff, came to consensus on a number of steps that the City can take to improve the parking situation in West Annapolis.

Summary of Recommendations

The committee selected options from the technical report. The key recommendations are:

- A more stringent parking standard for medical offices then for other types of offices.

- A combined effort of placing two (2) hour parking restrictions in the business district, a residential parking permit program in the residential areas, and a provision for teacher/staff parking at West Annapolis Elementary School.
- No metered parking.
- Marking of two hour spaces.
- Encouragement of shared parking.
- Shuttle availability from NAAA Stadium.
- Take steps to have the State provide parking for District Courthouse patrons.

Steps to Implementation

Some of the recommendations will require further community and City Council input and actions, such as the proposed residential parking permit program. However, some actions are already underway such as two hour parking and including West Annapolis in the shuttle route.

FINAL DRAFT

Report and Recommendations to the Annapolis City Council

WEST ANNAPOLIS PARKING COMMITTEE

Annapolis, Maryland
February 2003

Members
Bowie Rose
Bryan Barrett
Dave Taylor
Diane Domino
Jim Wilder
John Marshall
Linda Rodrock
Lynn Sherlock

I. Background

At a public meeting held in July 2002 to discuss the findings from the West Annapolis Parking Study, the participants suggested the formation of a committee to fine-tune the recommendations in the report prepared by Wells & Associates, the consulting firm contracted by the Department of Planning & Zoning to conduct the study.

In September 2002, the Mayor and City Council approved a list of 10 citizens and business owners in West Annapolis and letters of invitation were sent to them. About seven people accepted the invitation to be on the committee. This committee is charged with making recommendations to the Mayor and City Council concerning parking in West Annapolis, based on the technical information contained in the report and community preferences. The Committee met on three occasions and came out with the following recommendations.

II. Recommendations

General

1. The contemplated changes to the Zoning Code must include an increase in the requirement for medical office parking. Currently, the Department of Planning & Zoning is working on a revised and reorganized Title 21 of the City Code. As part of this, it has been suggested that the requirement for parking for medical offices need to be changed from one (1) space per 300 square feet to one(1) space per 200 square feet. This committee agrees with that proposed change.

2. The following must work together to be effective:

- **Establish 2 hour parking in the business areas *from 9 AM to 6 PM***
- **Enact a residential permit parking program in the residential areas.**
- **Provide parking for teachers/staff at West Annapolis Elementary School**
- ***All parking spaces must be explicitly delineated and appropriately signed***

It is vital that these steps be taken together so as to avoid pushing the parking from the business area to the residential area and vice versa. (Please see attached City Code regarding establishing a residential parking permit zone.) There must be a parking plan that includes parking for the school. Without such a plan, the teachers/staff at the West Annapolis Elementary School will have no place to park. It is recommended that the school board work with the city to explore either or both of the following:

- Provide off-street parking on the school's property
- Convert Tucker Street to a one-way section adjacent to the school and with the additional right of way, install angled parking specifically for staff of the school.

3. Metered Parking is not desired in West Annapolis by either the business people or the residents.

4. The City should mark all two-hour parking spaces and address the unauthorized signage and markings concerning parking in the area. There are areas where redlining of

curbs needs to be done at corners and driveways (e.g. Monterey Ave.)

5. **Shared Parking:** Two or more users should be encouraged to share their parking spaces in a common facility if the hours or days of peak parking are different. The West Annapolis Business Association should be encouraged to explore all shared parking opportunities.

6. **The state needs to providing parking for the District Courthouse patrons.** The Naval Academy Athletic Association (NAAA) has communicated to the City that they are working with the District Courthouse to begin providing some short term parking for the Courthouse. This committee welcomes this step and encourages its enactment.

7. **Provide a shuttle to the NAAA Stadium** This would serve all day parkers who do not have off-street parking and currently park on the street. Since the on-street parking will be limited to 2 hour parking, these employees would park at the stadium and be shuttled to their jobs. A shuttle could also carry patrons of businesses who stay over two hours. The details of this option would have to be negotiated with the NAAA.

8. **Enforcement is the key to any and all of the recommendations that the committee sets forth**. The City should commit resources to enforce the existing parking regulations and the recommendations whenever implemented.

9. ***Loading/Unloading zones:*** *The committee considered loading/unloading zones for delivery trucks. The spatial distribution of businesses in West Annapolis will require several loading/unloading zones. Given the very limited supply of parking vis-a-vis demand, and the high probability of under utilization of loading/unloading zones, the committee did not recommend designating spaces for loading/unloading. The committee believed that delivery trucks could find parking in the proposed designated two-hour parking zones if delivery is done before 9 AM or after 6 PM.*

Recommendations by Street (see the attached map)

Residential Parking Permit Program
Tucker Street - Residential Parking entire length of the street (with the block from Melvin t Monterey for possible conversion to teacher parking as mentioned above)
Monterey Avenue - Residential Parking from Tucker Street to Forbes Street
Annapolis Street - from Monterey Avenue to Melvin Avenue
Giddings Avenue - from Annapolis Street to Tucker Street
Melvin Avenue - from Annapolis Street to Tucker Street

Two-Hour Parking, 9 a.m. to 6 p.m.
Annapolis Street- from Melvin Avenue to Taylor Avenue
Giddings Avenue - from Forbes Street to Annapolis Street
Forbes Street - from Monterey Avenue to Giddings Avenue
Ridgely Avenue *as currently allowed*
Melvin Avenue - *from Rowe Boulevard to Ridgely Avenue on north side as currently allowed; from Ridgely Avenue to Annapolis Street on southeast side (already designated for two-hour*

parking). Note that the northwest side is currently signed as "no parking")

No Parking Anytime (on both sides of the road)
Taylor Avenue (from Rowe Boulevard to Annapolis Street)

City Code Regarding the Establishment of Residential Parking Permits

Section 12.32.030 Recommendation of establishment.

The transportation board may recommend to the city council the boundaries of residential parking districts and which streets in these districts shall be designated for residential parking. The board shall consider the creation, alteration or elimination of a district upon petition by residents of the affected area or street. This authority shall be in addition to, and may be exercised in conjunction with, any other authority the board may have with regard to parking and traffic matters. (Ord. O-11-98 §§ 1 (part): Ord. O-36-88 §§ 1 (part): prior code §§ 16-42.3)

Section 12.32.040 Considerations for creation, alteration or elimination.

The creation, alteration or elimination of a residential parking district shall take into account, among other things:

A. The effect on the safety of residents of the area under consideration from intensive use by nonresidents for parking of vehicles;

B. The need of the residents of the area to obtain adequate on-street parking adjacent to or close by their places of residence;

C. The difficulty or inability of residents of the area to secure adequate on-street parking adjacent to or close by their places of residence because of widespread use of available parking spaces in that area by nonresident transient motorists;

D. The impact of major public facilities and programs on the health, safety and welfare of the residents of the area and any unreasonable burdens placed on those residents in securing adequate on-street parking and gaining access to their places of residence by virtue of such facilities and programs;

E. The likelihood of alleviating, by the creation, alteration or elimination of a residential parking district, any problem of nonavailability of residential parking spaces;

F. The desire of the residents in the area for the creation, alteration or elimination of a residential parking district, and the willingness of those residents to bear the administrative costs incidental to the issuance of permits authorized;

G. The need for some parking spaces to be available in the area under consideration for use by visitors and the general public;

H. Such other factors as are deemed relevant. (Prior code §§ 16-42.4)

Section 12.32.050 Public hearing.

A. In order to determine whether a residential parking district should be created, altered or eliminated, the city council, upon receipt of a recommendation from the transportation board

shall conduct a public hearing with regard to the proposed determination.

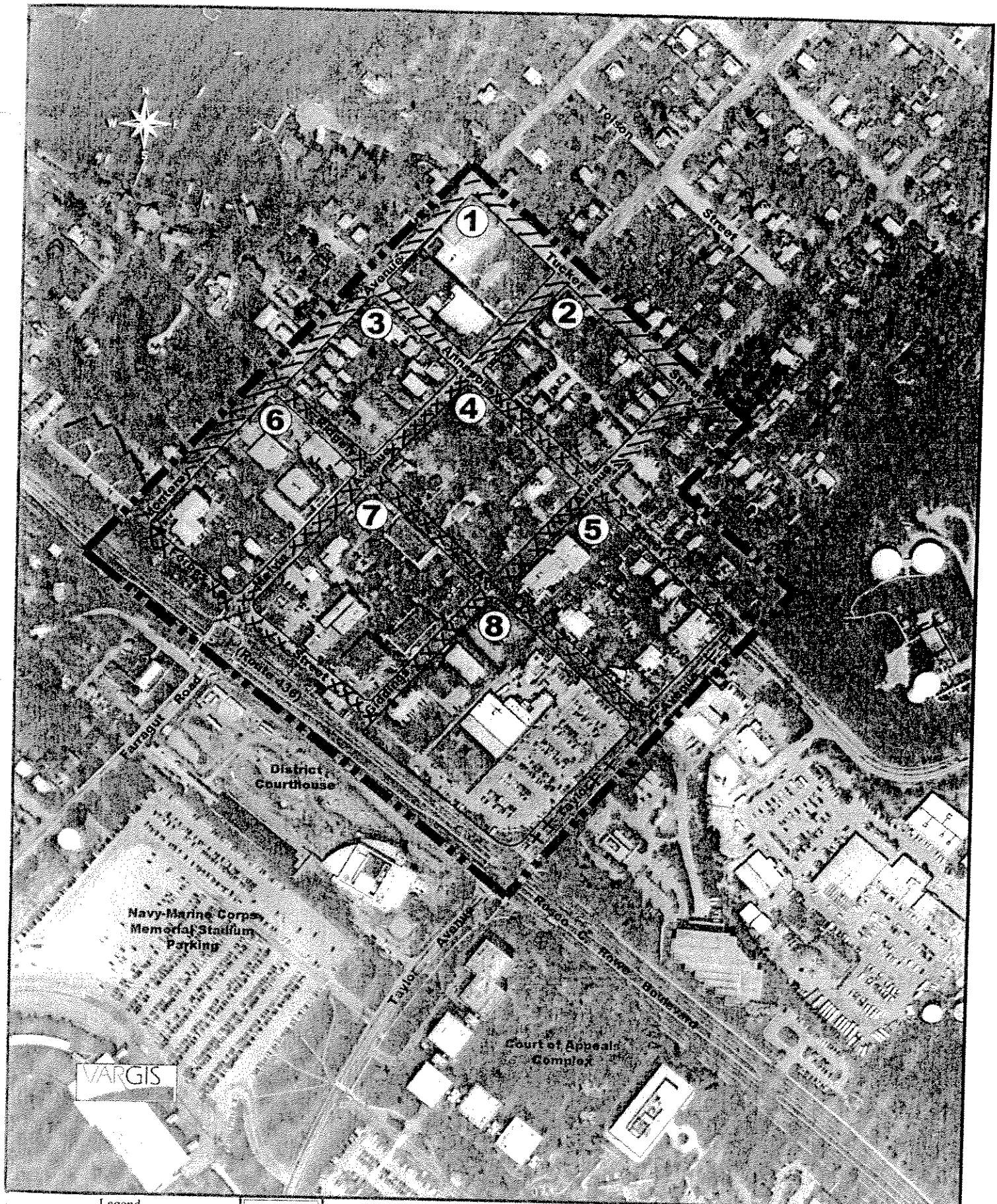
B. The hearing shall be held only after notice has been published in a newspaper of general circulation in the city. The notice shall state the purpose of the hearing, the exact location and boundaries of the area under consideration and the permit fees. In addition, similar notification shall be posted prominently within the area under consideration. (Ord. O-11-98 §§ 1 (part): Ord. O-36-88 §§ 1 (part); prior code §§ 16-42.5)

Section 12.32.060 Establishment, alteration or elimination by ordinance--Posting.

Within sixty days following the public hearing, the city council shall act upon the recommendation to create, alter or eliminate a residential parking district. The action shall be by ordinance. Following the creation or alteration of a residential parking district, signs shall be posted indicating the times, locations and conditions under which parking is limited by permit. (Prior code §§ 16-42.6)

Section 12.32.070 Regulations--Promulgation by mayor.

Upon the recommendation of the transportation board, the mayor may promulgate regulations to implement and administer the residential parking permit program. These regulations shall be promulgated only upon the recommendation of the board after an advertised public hearing. Each regulation shall have the force and effect of law not less than forty-five days after its issuance by the mayor, provided no objection to any regulation has been registered by the city council by a resolution adopted at a regular or special meeting of the city council within the forty-five-day period. (Ord. O-11-98 §§ 1 (part): Ord. O-36-88 §§ 1 (part): prior code §§ 16-42.7(a))



Legend

//// Residential Parking Permit

XXX Two-hour parking

++++ No parking anytime

West Annapolis Parking Study

City of Annapolis, Maryland

Study Area

WEST ANNAPOLIS
PARKING STUDY

Prepared for:
City of Annapolis

Prepared by:
Wells & Associates, LLC

June 25, 2002

Executive Summary

This study investigates the parking situation in the West Annapolis Business District and makes recommendations for improvements. The West Annapolis parking study limits comprise an eight-block area. The eight-block study area contains six apartments, 78,559 S.F. of retail space, 81,939 S.F. of office space, 118,506 S.F. of medical office space, 8,206 S.F. of restaurants, 1,146 S.F. of bank space, and an elementary school.

The parking supply in West Annapolis consists of 355 on-street parking spaces and 1,198 off-street spaces for a total of 1,553 parking spaces. The peak demand for parking within West Annapolis occurs between 2:00 PM and 3:00 PM. The total off-street parking occupancy in the study area was 79 percent, when 947 spaces of the total 1,198 **off-street** parking spaces were occupied. The **total study area on-street** parking demand reached 249 spaces or 70 percent of capacity of the 355 spaces available. Several blocks within the study experienced demands that exceeded the supply of parking spaces.

The future parking conditions were projected based on the known development planned in the study area. The proposed development plans will displace an existing parking lot and result in an overall parking supply **deficit** of 22 spaces for the entire study area. Additional development or redevelopment in the West Annapolis Area should be carefully considered to ensure that parking provided will meet or exceed the demand.

Recommendations have been made and can be implemented area wide or on a street-by-street basis. Some of the recommendations for mitigation include the following; parking limits, metered parking, Navy stadium parking, shuttle/transit, encourage shared rides and transit use residential parking permits, parking promotion, code enforcement/future development.

WEST ANNAPOLIS
PARKING STUDY

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WEST ANNAPOLIS
PARKING STUDY

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1.0 INTRODUCTION

This report presents the results of a parking study for the West Annapolis Business District in the City of Annapolis, Maryland. This study investigates the parking problems in the West Annapolis Business District and makes recommendations for improvements.

The West Annapolis parking study limits, as defined by the City Staff, comprise an eight-block area. The neighborhood is defined by Tucker Street to the north, Taylor Avenue to the east, Roscoe Rowe Boulevard to the south and Monterey Avenue to the west, as shown on Figure 1. The study area contains a mix of uses including; residential, retail, office, commercial, and institutional land uses.

This study was undertaken to answer the following questions:

- What is the current parking usage within the West Annapolis Business District?
- What are the effects of the surrounding land uses on parking?
- What are the parking concerns of the area business owners and residents?
- How many parking spaces should be provided in West Annapolis to satisfy existing demand?
- How many spaces should be provided to satisfy future demands generated by new development or re-development?
- Will deficiencies in parking exist and where?
- Can existing parking policies be modified to alleviate current shortages?
- Should additional parking be provided, and if so, where and by whom?
- Should spaces be designated and operated as short-term (two (2) hours or less) customer and visitor spaces vs. long-term (more than four (4) hours) employee and

resident spaces?

- How should the parking system be managed to ensure the appropriate balance of short- and long-term parking?
- What is the appropriate parking fee structure?
- Should the parking system be promoted, by signage, brochures, posted maps, etc.?
- Should the parking provisions of West Annapolis be amended with respect to base parking indices, size/density of development at which parking spaces must be provided, fees in lieu of constructing parking spaces, shared parking provisions, etc.?
- What role can transit play in reducing short- and long-term parking demands?

Sources of data for this study include the City of Annapolis Planning Department, the Urban Land Institute (ULI), the Institute of Transportation Engineers (ITE), field observations by Wells & Associates, and the files and library of Wells & Associates.

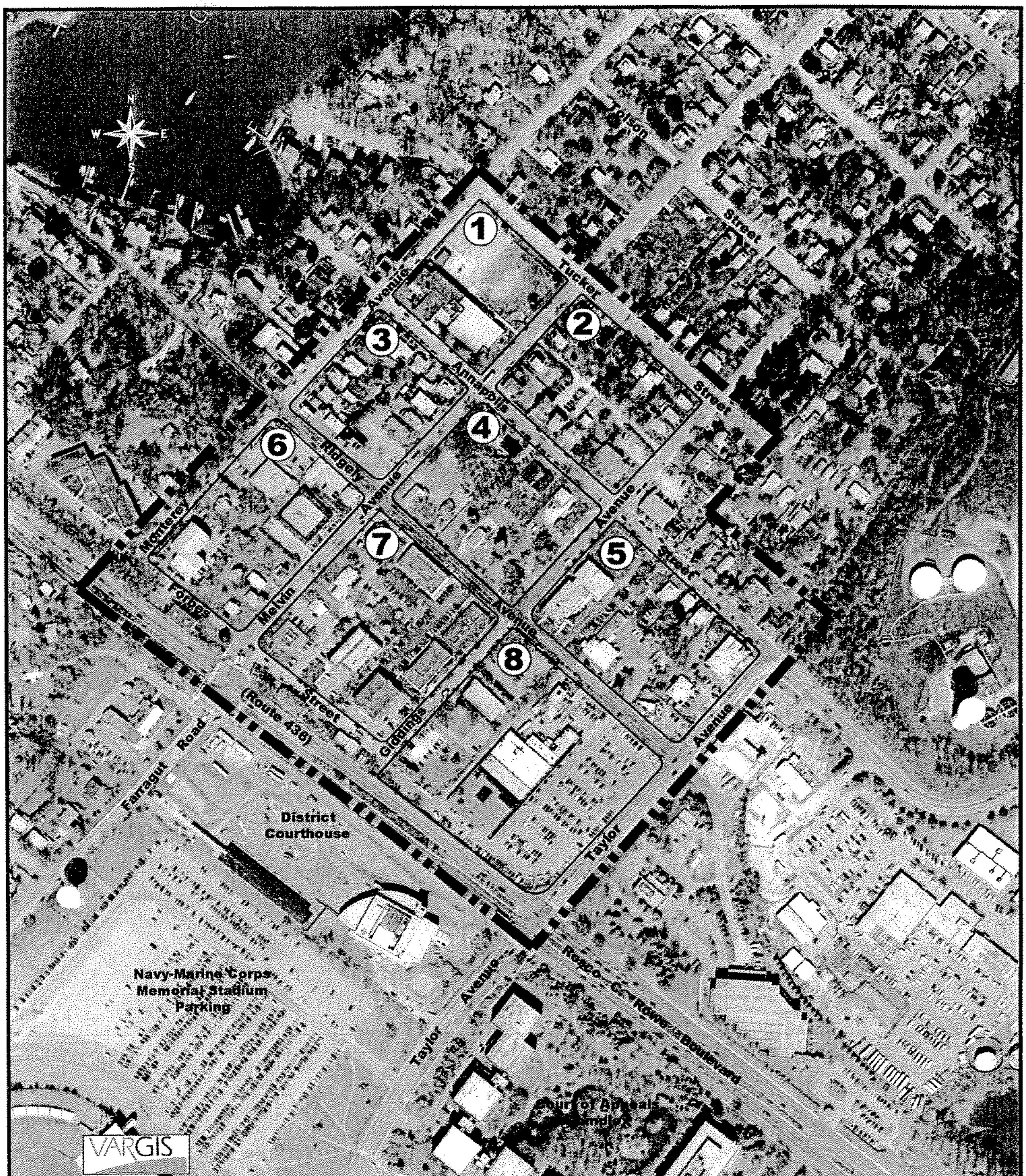

Figure 1
West Annapolis Study Area

West Annapolis Parking Study
City of Annapolis, Maryland
Study Area

WELLS & ASSOCIATES, LLC.
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS
1420 Spring Hill Road, Suite 600, McLean, Virginia 22102
170 Jennifer Road, Suite 280, Annapolis, Maryland 21401

2.0 EXISTING PARKING CONDITIONS

2.1 Overview

This section presents an evaluation of existing parking conditions in West Annapolis. It includes a review of:

- Existing land uses.
- Existing on- and off-street parking supply.
- Existing parking demands within each block.
- Existing parking surpluses/deficits within each block.

2.2 Land Uses

West Annapolis contains a mix of commercial land uses. The eight-block study area contains six apartments, 78,559 S.F. of retail space, 81,939 S.F. of office space, 118,506 S.F. of medical office space, 8,206 S.F. of restaurants, 1,146 S.F. of bank space, and an elementary school, as shown in Table 1. These quantities are based on data provided by the City of Annapolis.

There are significant buildings just outside the study area limits that impact the parking demand within West Annapolis. These include the District Courthouse, the Department of Natural Resources, and the Courts of Appeal Complex, and are shown on Figure 1.

Medical office is the predominant office use in West Annapolis, including dental offices, general practice, sports medicine, and specialty practices. These are generally located along Forbes Street, Giddings Avenue, Ridgely Avenue, and Monterey Avenue.

There are several large general office users including one of the City's largest civil engineering offices (McCrone, Inc.) located at the corner of Ridgely Avenue and Giddings Avenue. The remainder of the office space is comprised of small general office users, such as insurance, real estate, and law offices, which are located throughout the study area.

The retail uses comprise a strip retail center anchored by Graul's Market, small specialty retail stores, restaurants, a bank, and several hair salons. The majority of specialty retail space is concentrated along Annapolis Street. The strip retail center is located along Taylor Avenue.

Table 1
West Annapolis Parking Study
Existing Land Uses in West Annapolis, by Block **(1)**

Block	Land Uses					
	Apartments (D.U.)	Retail (S.F.)	Office (S.F.)	Med. Office (S.F.)	Restaurant (S.F.)	Bank (S.F.)
Block 1 **(2)**	-	-	-	-	-	-
Block 2	4	6,200	2,300	-	1,600	-
Block 3	-	1,500	-	-	2,632	-
Block 4	-	12,090	5,064	10,000	-	-
Block 5	2	17,410	26,103	16,163	-	1,146
Block 6	-	3,081	27,390	44,274	-	-
Block 7	-	600	15,726	42,713	-	-
Block 8	-	37,678	5,356	5,356	3,974	-
Total	6	78,559	81,939	118,506	8,206	1,146

Notes: (1) Land use information provided by City of Annapolis and research by Wells & Assocaites.
(2) Entire block occupied by West Annapolis Elementary School.

2.3 Parking Supply

The parking supply in West Annapolis consists of both on- and off-street spaces. A total of 1,553 parking spaces are located within West Annapolis, as shown in Table 2 and Figure 2.

The total **off-street** parking supply, consisting of private lots and garages, is 1,198 parking spaces. Seventy-seven (77) percent of the total parking (1,553 parking spaces) available are contained in off-street private lots and garages; 42 spaces on Block 2, 26 spaces on Block 3, 86 spaces on Block 4, 192 spaces on Block 5, 199 spaces on Block 6, 266 spaces on Block 7, 387 spaces on Block 8.

Generally, the **on-street** parking in the study area is not marked. Based on the Manual on Uniform Traffic Control Devices (MUTCD) a parallel parking space should be marked to provide between 22 to 26 feet in length. The available space for on-street parking was measured on both side of each street within the study area. Then assuming a 22-foot parking space length, the total on-street parking supply was determined to be 355 parking spaces. The measured distance did not include areas where parking would be restricted (i.e. driveways, intersections, fire hydrants etc.) Twenty-Three (23) percent or 355 spaces of the total parking supply (1,553 spaces) exists as on-street (or curb) parking spaces; 58 spaces on Block 1, 76 spaces on Block 2, 40 spaces on Block 3, 18 spaces on Block 4, 43 spaces on Block 5, 56 spaces on Block 6, 44 spaces on Block 7 and 20 spaces on Block 8.

There is one public parking lot near the West Annapolis Business District that provides, for a fee, parking for the City of Annapolis, the Navy Marine Corp Stadium parking lot with approximately 2,000 spaces, as shown on Figure 2. A portion of the Stadium parking lot is allocated for the District Courthouse building. The parking fee at the Stadium lot is a flat rate of $4.00 per day.

2.4 Parking Occupancy

Overview. Parking occupancy counts were conducted in the off-street public parking lots and garages and the on-street parking by Wells & Associates, on Thursday, June 28, 2001 between 7:00 AM and 7:00 PM to assess the parking conditions.

and 7:00 PM to assess the parking conditions.

Counts of the number of occupied and vacant parking spaces were recorded on an hourly basis in the off-street lots and on-street spaces, and are shown in Table 3. Summaries are shown in Figure 3.

It should be noted that the elementary school was in summer recess and that the parking occupancy counts do not reflect the school parking demand. Based on information provided by the City of Annapolis, the school has a staff of 40 people and an average of 5 volunteers at the school on any given day. The staff arrives at the school by 7:30 AM and leaves shortly after 3:00 PM. There is no off-street parking provided at the school. Staff and visitors park on Annapolis Street, Monterey Avenue, Melvin Avenue and Tucker Street. However, during the summer months Annapolis experiences a large influx of tourists, which results in a higher parking demand than the school. Therefore, to avoid double counting, no adjustments were made to account for school parking demand.

Detailed parking counts for the individual off-street parking (private lots) and on-street (curb parking) are contained in Appendix A. Based on parking count data, the peak demand for parking in the West Annapolis Business District occurred between 2:00 and 3:00 PM. The peak demand represents the time in which the highest number of parking spaces was occupied in a one hour period.

Practical Capacity

Based on the Institute of Transportation Engineers (ITE) and the Urban Land Institute (ULI) data, as a "rule of thumb", a parking facility is considered "full" when approximately 85 percent or more of all spaces are occupied. Some empty spaces are needed to accommodate normal parking turnover and to avoid extended searches for an empty space.

Eighty-five (85) percent occupancy would most appropriately apply to short-term (metered or non-permit) spaces and small parking lots, and 90 percent occupancy would most appropriately apply to large parking lots. Since the majority of off-street parking lots in West Annapolis are small lots, a practical capacity of 85 percent has been assumed for this study.

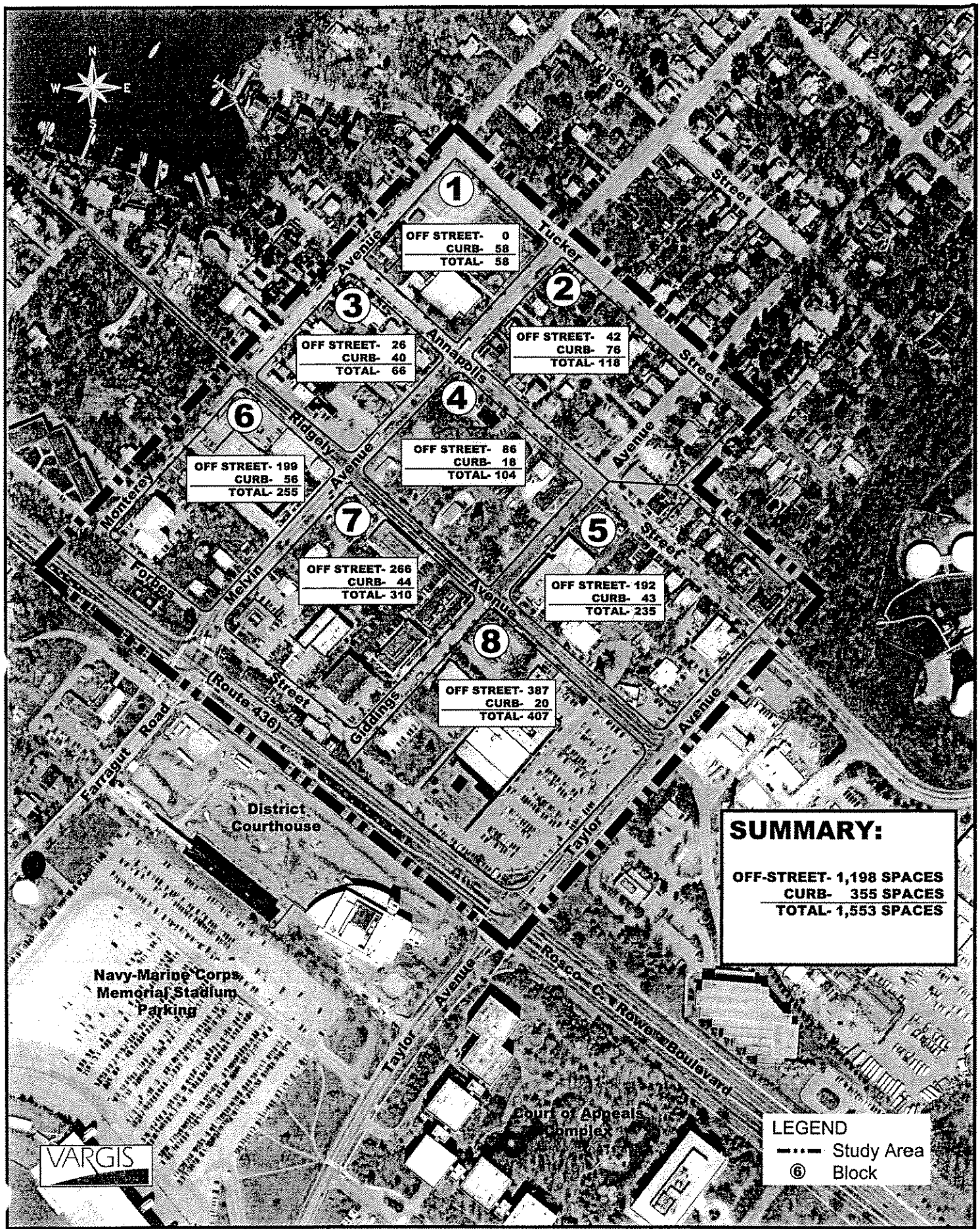

Figure 2
Existing Parking Supply
By Block

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West Annapolis Parking Study
City of Annapolis, Maryland
Study Area

WELLS & ASSOCIATES, LLC.
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1420 Spring Hill Road, Suite 600, McLean, Virginia 22102
170 Jennifer Road, Suite 280, Annapolis, Maryland 21401

Table 2
West Annapolis Parking Study
Existing Parking Supply (Spaces), by Block

District	Private Off-Street **(1)**	On-Street **(2)**	Total
Block 1	0	58	58
Block 2	42	76	118
Block 3	26	40	66
Block 4	86	18	104
Block 5	192	43	235
Block 6	199	56	255
Block 7	266	44	310
Block 8	387	20	407
Total	1198	355	1553

Notes: (1) Based on data collected by Wells & Associates.
(2) On-Street parking supply based on field measurements.

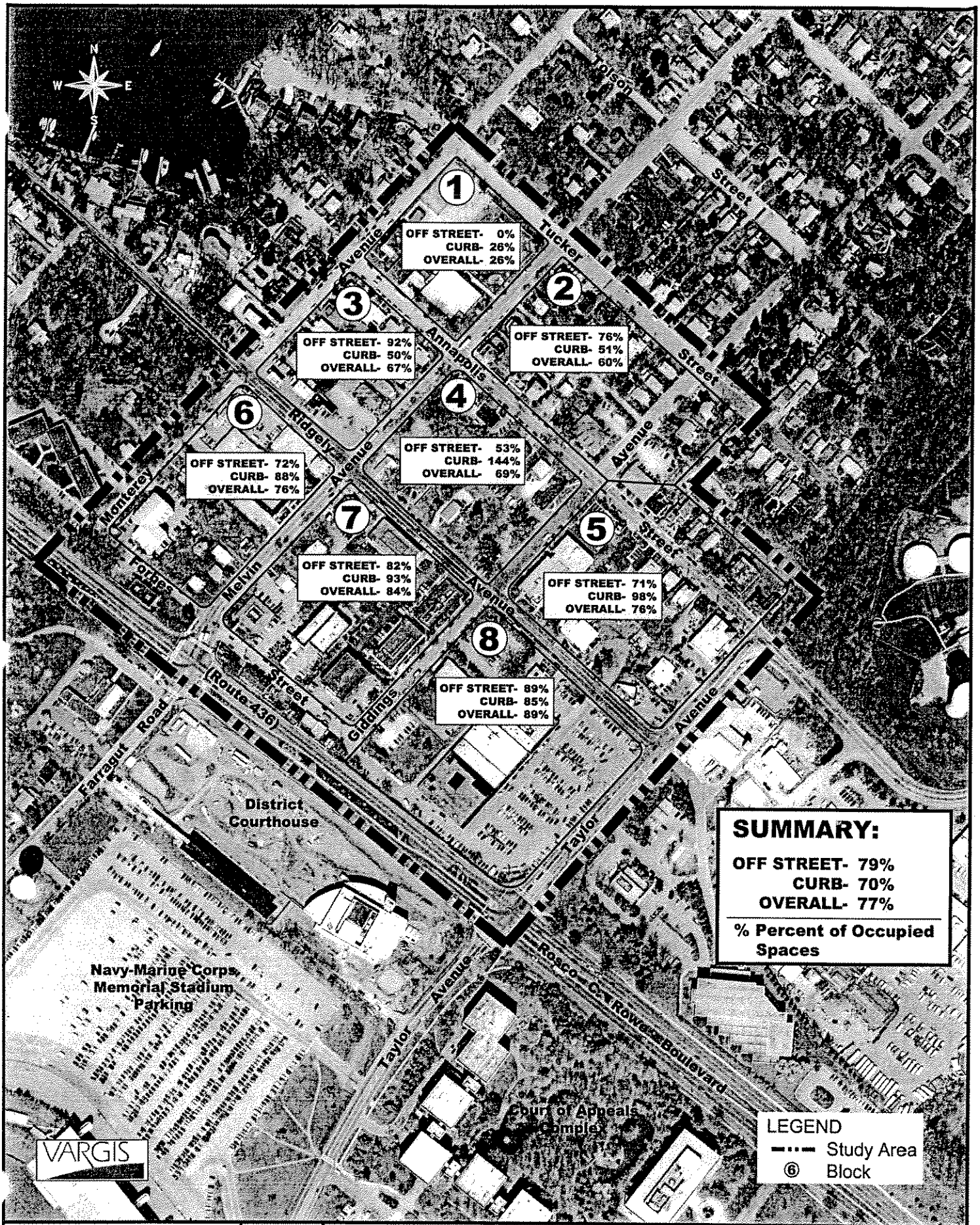

Figure 3
Existing Peak Hour Occupancy By Block

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West Annapolis Parking Study
City of Annapolis, Maryland
Study Area

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Table 3
West Annapolis Parking Study
Existing Weekday Afternoon Parking Occupancy (Spaces), by Block

Time Period	Block 1 Private Off-Street	Block 1 On-Street	Block 1 Total	Block 2 Private Off-Street	Block 2 On-Street	Block 2 Total	Block 3 Private Off-Street	Block 3 On-Street	Block 3 Total	Block 4 Private Off-Street	Block 4 On-Street	Block 4 Total
Weekday Parking Occupancy Counts												
Parking Supply	-	58	58	42	76	118	26	40	66	86	18	104
Maximum Demand	-	20	20	42	43	83	25	26	46	46	27	72
Peak Hour Demand	-	15	15	32	39	71	24	20	44	46	26	72
Weekday Percent Occupancy												
Maximum Demand	-	34%	34%	100%	57%	70%	96%	65%	70%	53%	150%	69%
Peak Hour Demand	-	26%	26%	76%	51%	60%	92%	50%	67%	53%	144%	69%

Notes: (1) Based on data collected by Wells & Associates on Thursday, June 28, 2001..

Table 3 Continued
West Annapolis Parking Study
Existing Weekday Afternoon Parking Occupancy (Spaces), by Block

Time Period	Block 5 Private Off-Street	Block 5 On-Street	Block 5 Total	Block 6 Private Off-Street	Block 6 On-Street	Block 6 Total	Block 7 Private Off-Street	Block 7 On-Street	Block 7 Total	Block 8 Private Off-Street	Block 8 On-Street	Block 8 Total	Summary Private Off-Street	Summary On-Street	Summary Total
Weekday Parking Occupancy Counts															
Parking Supply	192	43	235	199	56	255	266	44	310	387	20	407	1198	355	1553
Maximum Demand	142	44	182	160	54	208	233	43	276	346	17	363	947	252	1196
Peak Hour Demand	136	42	178	144	49	193	219	41	260	346	17	363	947	249	1196
Weekday Percent Occupancy															
Maximum Demand	74%	102%	77%	80%	96%	82%	88%	98%	89%	89%	85%	89%	79%	71%	77%
Peak Hour Demand	71%	98%	76%	72%	88%	76%	82%	93%	84%	89%	85%	89%	79%	70%	77%

Notes: (1) Based on data collected by Wells & Associates on Thursday, June 28, 2001..

Off-Street Parking Spaces. As previously indicated, the counts shown in Table 3 indicate that the peak demand for parking within West Annapolis occurred between 2:00 PM and 3:00 PM. The total off-street parking occupancy in the study area was 79 percent, when 947 spaces of the total 1,198 **off-street** parking spaces were occupied. The off-street parking occupancy within Blocks 3 and 8 exceeded the 85 percent of capacity during this peak hour.

On-Street Spaces. On-street parking demand exceeded the 85 percent threshold within blocks 4, 5, 6, and 7 during the weekday peak hour. The **total** study area on-street parking demand reached 249 spaces or 70 percent of capacity (355 spaces) during this period. Block 4 exceeds 100 percent of capacity from 9am to 6pm. Block 5 exceeds 100 percent of capacity from 12pm to 1pm. The on-street parking demand can exceed the measured capacity of 355 spaces in several ways; the parking space length required by some vehicles is less than 22 feet, vehicles were observed double parked, and vehicles were observed parked in designated "no parking" areas.

Overall Occupancy (on-street and off-street). The parking occupancy counts show that 1,196 parking spaces (or 77 percent of **all** spaces) were occupied during the weekday peak hour within the eight-block area of West Annapolis.

3.0 FUTURE PARKING CONDITIONS

3.1 Overview

This section presents an evaluation of future parking conditions in West Annapolis. It includes a review of:

- Future land uses.
- Future on-and off-street parking supply.
- Future parking demands within each block.
- Future parking surpluses/deficits within each block.

3.2 Land Uses

The City of Annapolis Planning and Zoning Department provided information related to a development proposal for an 18,000 S.F. office building to be located on Forbes Street and Giddings Avenue, within Block 8. This building will displace 48 existing surface parking spaces that are 75 percent occupied (36 parked vehicles) during the weekday peak hour. The results are summarized in Table 4.

The proposed office building would be required to supply a total of 60 parking spaces to meet the City zoning ordinance. The hourly parking demand that will be associated with this new building was determined based on the parking indices contained in "Shared Parking", published by ULI. Based on the ULI data, the 18,000 S.F. office building would occupy 56 spaces (or 93 percent) during the critical peak hour occurring between 2:00 PM and 3:00 PM.

Table 4
West Annapolis Parking Study
Future/Planned Land Use Parking Demand Calculation

Site Data;

Land Use:	General Office	
Size **(1)**:	18,000	S.F.
Location:	Block 8	
Parking Requirement **(2)**:	3.33	spaces/1,000 S.F. GFA
Code (Max) Parking Demand **(3)**:	60	spaces
Parking Supply:	60	spaces
Displaced Parking Supply:	48	spaces
Peak Hour Parking Demand Displaced: **(4)**	36	vehicles

Notes: (1) Information provided by the City of Annapolis.

(2) Based on City of Annapolis Code.

(3) All spaces assumed to be reserved throughout the day.

(4) Based on Urban Land Institute data.

3.3 Future Parking Demand

Overview. Future parking demand was estimated on an hourly basis for the entire study area to include the planned office building on Block 8. The parking demand and supply was compared for each block. The number of spaces required to maintain adequate capacity (85 percent) was calculated to determine parking demand that would be displaced from each block. The results are summarized on Tables 5 and 6.

3.4 Future Parking Surpluses/(Deficits)

Future Parking surpluses and/or deficits were calculated for each block within the study area and within each block based on the parking demand and the target capacity of 85 percent.

Table 5 indicates that within the **off-street parking lots** the parking demand displacement of two spaces in Block 3 and 31 spaces in Block 8 (33 total spaces) would be necessary to allow the off-street parking lots to maintain a practical capacity of 85 percent. This demand displacement will result in an increase demand of 33 spaces for the on-street parking supply since all of the off-street lots are privately owned and limited to a specific tenants use.

Table 6 indicates that the future deficiencies of the **on-street parking** within Blocks 4, 5, 6, and 7 would cause a demand displacement of 63 total spaces.

The future peak hour surplus or deficit in each block for both the on-street (curb parking) and off-street parking is shown in Figure 4.

The total future parking displacement for the eight-block study area was calculated and compared to the amount of reserve on-street parking. Table 7 indicates that the future deficiencies of on-and off-street parking combined would cause a total demand displacement of 96 spaces. There is a surplus of on-street parking in Blocks 1, 2, and 3. Assuming that the displaced parking demand is distributed and met among the various blocks with excess on-street parking supply, there will be an overall parking supply **deficit** of 22 spaces within the study area. The parking displacement by block is shown in Figure 5.

Table 5
West Annapolis Parking Study
Future Parking Demand Summary (spaces), by Block for Private, Off-Street Parking

Block	Peak Hour Parking Demand (Private, off-street) (spaces)	Parking Supply (Private, off-street) (spaces)	Surplus/Deficit (Private, off-street) (spaces)	Percent Parking Occupancy Surplus/Deficit (Private, off-street)	Percent Parking Supply Surplus/Deficit (Private, off-street)	Parking Displacement Required to Attain 15% Surplus
Block 1	0	0	0	0%	0%	0
Block 2	32	42	10	76%	24%	0
Block 3	24	26	2	92%	8%	2
Block 4	46	86	40	53%	47%	0
Block 5	136	192	56	71%	29%	0
Block 6	144	199	55	72%	28%	0
Block 7	219	266	47	82%	18%	0
Block 8 **(1)**	370	399	29	93%	7%	31
Total	971	1210	239	80%	20%	33

Notes: (1) Includes forcasted parking demand for 18,000 S.F. office, net parking supply of 60 spaces, and reduction of 36 displaced vehicles.

Table 6
West Annapolis Parking Study
Future Parking Demand Summary (spaces), by Block for Public, On-Street Parking

Block	Peak Hour Parking Demand (Public, on-street) (spaces)	Parking Supply (Public, on-street) (spaces)	Surplus/Deficit (Public, on-street) (spaces)	Percent Parking Occupancy (Public, on-street)	Percent Parking Supply Surplus/Deficit (Public, on-street)	Parking Demand Displacement Required to Attain 15% Surplus
Block 1	15	58	43	26%	74%	0
Block 2	39	76	37	51%	49%	0
Block 3	20	40	20	50%	50%	0
Block 4	26	18	-8	144%	-44%	12
Block 5	42	43	1	98%	2%	5
Block 6	49	56	7	88%	13%	1
Block 7	41	44	3	93%	7%	4
Block 8 **(1)**	53	20	-33	265%	-165%	41
Total	285	355	70	80%	20%	63

Notes: (1) Includes forcasted parking demand for 18,000 S.F. office, net parking supply of 60 spaces, and reduction of 36 displaced vehicles.

Table 7
West Annapolis Parking Study
Future Parking Demand Summary (spaces), by Block

Block	Total Parking Demand Displacement Required to Attain 15% Surplus (Off-Street and On-Street)	On-Street Parking Surplus	Parking Deficit
Block 1	0	34	0
Block 2	0	26	0
Block 3	2	14	0
Block 4	12	0	-12
Block 5	5	0	-5
Block 6	1	0	-1
Block 7	4	0	-4
Block 8 **(1)**	72	0	-72
Total	96	74	-94
Overall Parking Surplus/Deficit (spaces)		-22	

Notes: (1) Includes forcasted parking demand for 18,000 S.F. office, net parking supply of 60 spaces, and reduction of 36 displaced vehicles.
(2) On-street parking adjustments.

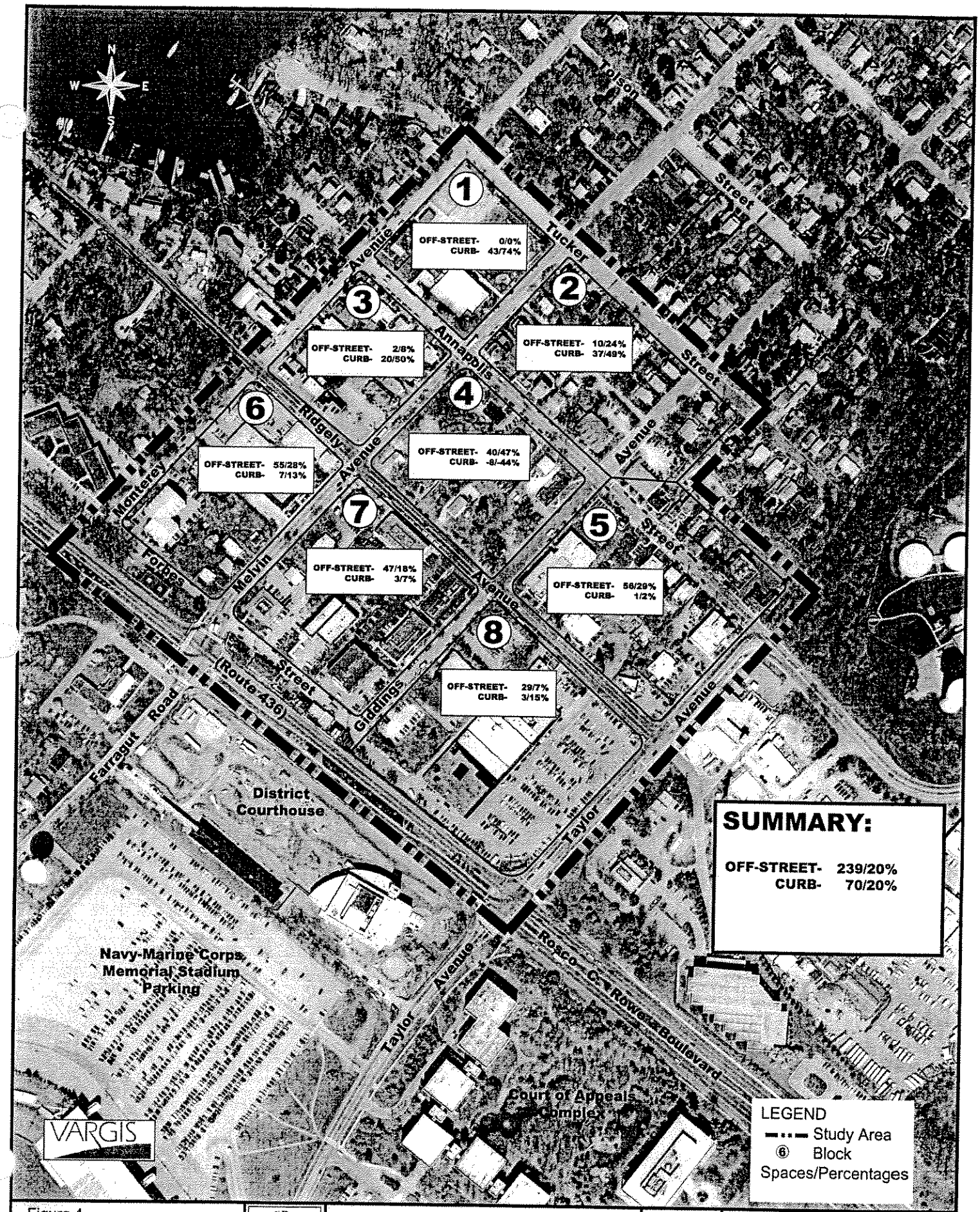

Figure 4
Future Peak Hour Surplus/ Deficit (Spaces) Reserve Capacity, By Block

West Annapolis Parking Study
City of Annapolis, Maryland
Study Area

WELLS & ASSOCIATES, LLC.
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS
1420 Spring Hill Road, Suite 600, McLean, Virginia 22102
170 Jennifer Road, Suite 260, Annapolis, Maryland 21401

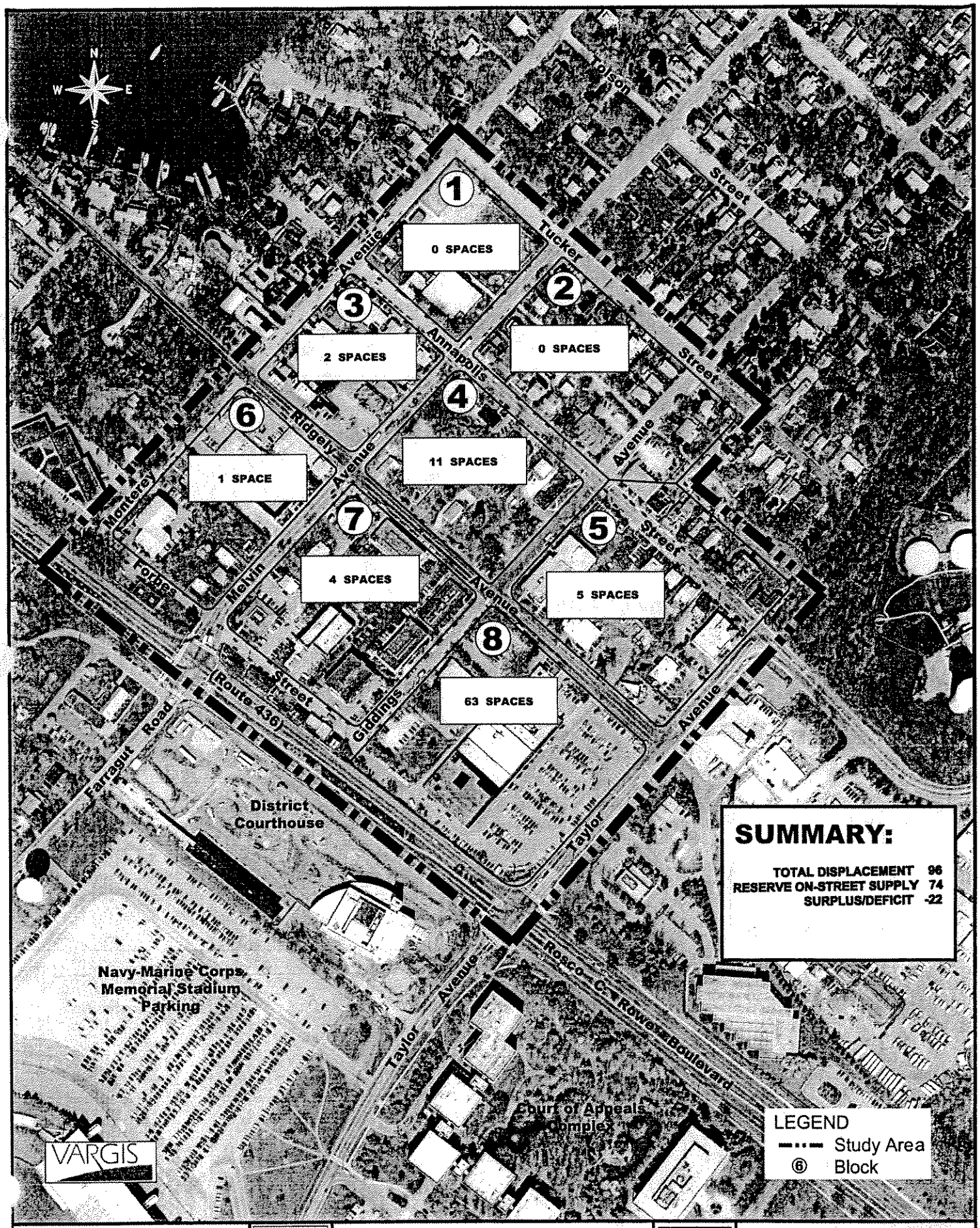

Figure 5
Parking Displacement
By Block

West Annapolis Parking Study
City of Annapolis, Maryland
Study Area

WELLS & ASSOCIATES, LLC.
TRAFFIC, TRANSPORTATION, and PARKING CONSULTANTS
1420 Spring Hill Road, Suite 600, McLean, Virginia 22102
170 Jennifer Road, Suite 260, Annapolis, Maryland 21401

4.0 PARKING POLICIES

4.1 Overview

This chapter discusses policy-related issues, which include:

- The importance of short- vs. long-term parking.
- Parking fees.
- Time limits/parking permits.
- Providing additional parking spaces.
- Parking location.
- Parking promotion.
- Shared rides and transit.
- Zoning ordinance modifications.
- Mitigation Measures.

4.2 Parking Hierarchy

Short-term parking is generally two to four hours, generated by retail customers, restaurant patrons, guests, and visitors. Long-term parking is generally over four hours, generated primarily by employees.

Short-term parking spaces should be provided close to a visitor/s final destination (generally within 500 feet), on the street in front of retail shops and restaurants, in adjacent surface parking lots, or on the first level(s) of multi-level parking structures.

On-street, metered parking should be priced to encourage high turnover for short-term parking and discourage all-day employee parking. Off-street lots and garages should be managed to encourage long-term parking for employees and others parking for more than two (2) hours.

4.3 Parking Fees

Fees for on-street, metered parking within the City of Annapolis are generally $0.25 per ¼ to ½ hour for up to two (2) hours. The Navy Marine Corp Stadium parking lot, adjacent to the District Court and Court of Appeals buildings, is a flat fee of $ 4.00 per day.

The current fee structure of the Stadium parking lot does not appeal to patrons of the District Court and Court of Appeals due to the single fee structure charged to short-term parkers. Many of the Courthouse patrons park in Block 8 of West Annapolis, using the existing on- and off-street parking.

The Stadium parking charges should be modified to encourage short term parking, reducing the demand in West Annapolis.

4.4 Time Limits and Parking Permits

There are no time limits or permits required for parking within the majority of West Annapolis. Only a portion of the on-street parking on Giddings Avenue is designated for two-hour parking. This time restriction is typical of other downtown locations. Time limitations through signing and/or meters should be considered in the blocks with primarily business/commercial uses.

Time limitations through the use of standard signing and/or residential parking permits should be considered in the streets serving primarily residential uses. If residential parking is a considered option it should be implemented beyond the study limits and into adjacent blocks of the study area. A potential mitigation measure would be the issuance of residential parking permits within West Annapolis and would require coordination with the City and community.

4.5 Walking Distance

Acceptable walking distances are a function of many factors, including trip purpose, type of parker, line of sight to destination, weather protection, feeling of safety and security, user expectations, and other factors. Five hundred (500) feet is generally accepted as the maximum acceptable walking distance for

customers at suburban regional shopping centers. Eight hundred (800) to 1,000 feet is probably the maximum acceptable walking distance in West Annapolis. The typical block size in West Annapolis is approximately 450 to 600 feet in length and width, with intermediate driveways. On average, commercial patrons walk approximately 300 to 400 feet, if they are parking on the street and block of their destination. Those who park on the street usually have a direct line of sight to their destination. Given the pleasant environment within West Annapolis, it is likely that patrons would walk several blocks to their destination.

4.6 Provision of Additional Parking Spaces

A future deficit of approximately 22 spaces is anticipated, with the construction of the future office building. The site area should be evaluated to determine if additional on-street spaces could be provided for the displaced parking demand. This could possibly be achieved by providing parking on the Forbes Street frontage, and re-striping the parking on Forbes Street adjacent to Graul's grocery store.

4.7 Transit

Providing transit/shuttle service into West Annapolis would provide an alternate means of transportation to the area and help reduce the long term parking demand created by employees and short-term demand created by visitors and patrons.

4.8 Zoning Ordinance Modifications

The City Zoning code does not distinguish between general office space and medical office space for the number of parking spaces required. Medical office space typically requires more spaces per 1,000 square feet of space compared to general office space. The need arises from the number of visitors to medical office space is substantially higher than general offices. Typically, medical office space requires 1½ to 2 times the amount of parking spaces compared to general office space. The majority of office use in the West Annapolis study area is medical, putting a much higher demand on the available on and off-street parking supply. It is recommended that the City parking requirements be modified

to increase the number of spaces required for medical office space from 1 parking space per 300 square feet of gross floor area to 1 space per 150 square feet of gross floor area. Existing businesses should also be reviewed to ensure that they are in compliance with City occupancy permits.

4.9 Community Outreach Program

As part of this study, a town meeting was held with local business owners and residents of West Annapolis to discuss the initial survey findings and the communities parking issues and concerns. A list of the communities' issues/concerns includes the following:

1. Encroachment of on-street business parking into residential areas
2. Illegal parking
3. Insufficient off-street parking for business users
4. On-street Parking demand increasing.

Residents and business owners alike have noted an increase in the demand in recent years for on-street parking along Monterey Avenue, blocks 3 and 6; along Giddings Avenue and Annapolis Street, blocks 2, 4, 5, 7, and 8. The change is perceived to be from the relocation of a medical office to Monterey Avenue, the increase in business activity at several hair salons on Annapolis Street, business owners restricting the off-street parking to patrons only, forcing employees to park on-street, and the District Courthouse visitors. Illegal parking, such as blocking driveways, parking too close to intersections, and double parking were also noted by the community. Insufficient off-Street parking for the business along Giddings and Forbes Street was a concern in relation to the planned office building.

5.0 RECOMMENDATIONS

Based on the existing field data collected, forecasted parking demand, the supply/deficit analysis, and the community outreach program, the following mitigation measures were developed. These measures reflect a tiered approach in addressing the parking situation in West Annapolis, and will require monitoring to ensure that appropriate results are achieved. The recommendations can be implemented area wide or on a street-by-street basis.

5.1 Recommended Area Wide Mitigation Measures

Parking Limits. Implementation of timed on-street parking for visitors with a possible limit of two hours could be administered by installing signs along any of the streets within the study area. The intent is to eliminate long-term parkers that frequent the District Court and Court of Appeals buildings and employees, making spaces available for patients, visitors and retail patrons. This measure is a simple, cost-effective approach that could be easily provided. Enforcement of this measure is required to ensure compliance.

Metered Parking. Install two-hour metered parking within specific areas of West Annapolis. We recommend that the fee structure be similar to the historic district of downtown Annapolis (.25 per half hour). While this is an effective method for deterring long-term parking, meter installation, delineation of parking spaces, and enforcement are required. This method provides revenues that can offset some of the installation, maintenance, and enforcement costs.

Navy Stadium Parking. Negotiations with the operator of the Navy Marine Corp Stadium parking facility should be undertaken to investigate changing to a variable fee system with hourly charges. Lower fees for short-term parking would encourage the courthouse patrons to use the Stadium parking lot rather than West Annapolis.

Shuttle/Transit. The implementation of a shuttle system or expansion of the existing transit system, incorporating the stadium parking area should also be considered to provide employees and patrons with easy access to West Annapolis.

Encourage Shared Rides and Transit Use. A program for business owners of West Annapolis to encourage employees to use transit or ride sharing should be implemented. This would require a program that would provide transit information to business owners, coordinate rideshare programs, and gather information to ensure the program utilization. This would reduce the demand for on- and off-street parking, freeing space for visitor and patron parking. It would further reduce the infiltration of parking demand into the adjacent residential streets.

Residential Parking Permits. A potential measure would be to introduce the City Residential Parking Permit Program into West Annapolis. This program allows **non-residents** to park for two hours only during a specified time, and allows **residents** to park without restriction. If this program is selected it should be extended well into the adjacent residential neighborhood to discourage non-residents from parking further into the Wardour area of West Annapolis. This program requires the residents to bear some of the costs in a yearly fee. Installation of residential parking signs and enforcement are required. Implementation of this program also requires consensus from the residents and City Council approval.

Parking Promotion. A program to inform businesses, residents, and visitors to West Annapolis should be developed to maximize the efficiency of existing and future parking systems. This could be accomplished through fliers, pamphlets, and other information posted in businesses and surrounding buildings. This program should reflect the measures implemented and also provide for feedback from the community to address future issues. This program could be administered through a committee that represents both businesses and residents.

Code Enforcement/Future Development. Some of the existing businesses within West Annapolis may not adhere to current zoning approvals related to number of employees, parking requirements, hours of operation, and number and type of tenants. Therefore, it may be necessary for the City to visit various commercial tenants to ensure that businesses are in compliance with the City Code. The City of Annapolis Zoning Code should be changed to reflect the different parking demands of different types of office uses, i.e. medical office and dental office have a greater parking demand than general office users. Any revitalization of existing buildings in the West Annapolis area should be reviewed as to the type of tenant that will be permitted. Requirements for replacement of displaced parking should be instituted in addition to meeting current zoning requirements. The parking information

contained in this report should be used to evaluate future development proposals and their associated impact to existing business, resident and visitor parking.

5.2 Recommended Mitigation Measures By Street

♦ Forbes Street - Post "No Parking" signs to restrict on-street parking from restricting access to private driveways. Install parking meters or post two hour parking restrictions from 9AM to 6PM weekdays to limit use of parking by employees and Courthouse visitors. Provide angled parking between Giddings Avenue and Graul's parking lot.

♦ Ridgley Avenue - Pave the grassy road frontages in the block between Melvin Avenue and Giddings Avenue to create additional on-street parking. Post two hour parking limits or install parking meters to encourage short term parking.

♦ Annapolis Street - Post two hour parking limits or install parking meters to encourage short term parking.

♦ Monterey Avenue - Post "No Parking" signs to restrict on-street parking from restricting access to private driveways. Post two hour parking restrictions from 9AM to 6PM weekdays to limit use of parking by employees. Area potential for residential parking on west side metered parking on east side of street.

♦ Melvin Avenue - Post "No Parking" signs to restrict on-street parking from restricting access to private driveways. Post two hour parking restrictions from 9AM to 6PM weekdays to limit use of parking by employees.

♦ Giddings Avenue - Post "No Parking" signs to restrict on-street parking from restricting access to private driveways. Install parking meters or post two hour parking restrictions from 9AM to 6PM weekdays to limit use of parking by employees and Courthouse visitors.

Appendix A

Existing Parking Occupancy Counts Collected by Wells & Associates
on Thursday, June 28, 2001

ON-STREET PARKING

TIME	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
Total Availble	4	18	31	20	23	20	20	15	18	25	29	21	7	19	7	14	18	34	10	15	9	19
Feet	80	409.9	693.10	626.3	512.2	439.4	458.9	343.2	397.8	559.10	646.10	462.10	161.10	429.11	160.1	317.2	355.2	759.10	227.6	624.2	197.8	431.2
7:00-8:00	1	2	13	9	5	5	7	8	6	3	10	6	5	0	4	2	6	4	4	0	4	10
8:00-9:00	1	3	7	8	6	7	4	8	7	7	18	9	4	13	5	11	13	13	8	5	7	18
9:00-10:00	1	2	4	7	6	7	5	6	11	6	17	9	5	20	6	21	13	24	10	19	8	20
10:00-11:00	1	2	3	5	8	4	24	3	10	6	20	7	7	17	7	23	17	25	10	14	7	20
11:00-Noon	1	2	4	5	7	6	22	5	12	10	20	8	7	19	7	22	13	31	10	17	7	19
Noon-1:00	1	2	4	4	6	6	21	8	10	21	26	9	6	20	8	26	15	27	7	12	7	19
1:00-2:00	1	2	5	4	6	12	21	7	12	17	23	10	7	19	7	24	14	27	7	10	7	16
2:00-3:00	1	3	5	4	5	6	22	6	8	17	24	6	7	21	6	23	13	29	9	22	7	16
3:00-4:00	1	0	6	4	4	5	23	6	6	11	26	6	5	21	7	23	12	28	9	22	7	19
4:00-5:00	1	2	6	3	4	4	22	5	5	18	23	5	7	25	6	22	14	27	7	17	8	13
5:00-6:00	1	1	8	3	6	3	20	6	5	13	22	5	8	18	4	14	12	18	8	13	5	12
6:00-7:00	1	1	9	5	6	2	14	7	4	12	17	6	1	12	3	10	10	17	7	9	3	7

OFF-STREET PARKING

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Total Availble	19	21	34	19	7	4	6	15	6	6	10	29	6	4	82	6	10	24	8
7:00-8:00	5	6	3	4	0	0	0	2	0	0	0	1	0	0	11	0	0	5	9
8:00-9:00	3	8	3	5	5	0	0	2	0	0	0	11	0	0	46	0	0	13	7
9:00-10:00	2	9	9	13	12	2	1	4	0	2	2	10	2	0	70	0	0	16	7
10:00-11:00	9	8	16	12	1	2	1	4	0	2	2	20	2	2	79	0	2	15	9
11:00-Noon	9	10	14	15	2	3	1	4	1	2	1	28	2	1	80	2	4	21	8
Noon-1:00	9	18	24	14	2	2	1	6	1	3	1	20	6	0	76	1	2	15	14
1:00-2:00	6	16	31	19	1	1	2	7	2	3	1	20	7	0	78	1	2	18	11
2:00-3:00	9	10	22	21	3	0	1	6	2	4	3	24	7	0	85	1	2	19	7
3:00-4:00	7	7	25	19	2	1	1	6	2	4	2	27	3	0	84	1	2	21	4
4:00-5:00	10	6	18	19	3	1	1	6	1	3	2	23	7	1	82	1	2	20	4
5:00-6:00	10	7	14	14	1	1	1	4	1	2	2	10	6	0	78	5	2	16	7
6:00-7:00	7	5	10	14	2	1	0	3	1	2	1	6	3	0	63	3	1	10	6

TIME	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
Total Availble	7	10	15	11	13	70	51	36	39	39	38	92	5	45	29	48	260	29	10	8	4	27
7:00-8:00	1	0	0	0	0	1	0	4	7	6	11	23	0	5	2	10	40	0	0	0	0	3
8:00-9:00	0	1	1	1	2	2	11	6	15	12	23	64	0	20	14	15	85	3	0	1	0	4
9:00-10:00	2	10	7	2	8	21	25	21	26	25	36	86	1	35	18	26	166	15	9	3	1	7
10:00-11:00	2	9	9	6	11	34	37	24	31	37	30	92	1	43	29	33	184	22	7	3	1	11
11:00-Noon	3	8	11	6	16	31	40	26	32	20	37	90	3	43	28	29	176	22	8	5	3	14
Noon-1:00	4	6	13	6	8	46	28	24	25	16	26	83	4	31	28	26	199	17	4	5	1	15
1:00-2:00	1	9	13	5	7	45	27	26	25	27	21	84	8	28	21	38	241	17	7	3	1	15
2:00-3:00	0	7	11	8	10	49	35	24	24	32	36	90	6	26	28	36	250	24	6	6	1	13
3:00-4:00	0	9	14	7	12	58	37	27	38	39	29	88	5	26	29	40	220	23	6	5	1	14
4:00-5:00	2	3	9	3	11	55	40	29	28	31	29	89	6	24	25	35	168	22	5	6	1	12
5:00-6:00	0	3	3	3	11	34	23	28	24	24	29	81	3	18	21	25	140	19	2	4	2	10
6:00-7:00	0	2	2	2	5	38	17	16	21	19	23	64	3	16	13	18	177	11	2	2	1	6

DRAFT DRAFT

City of Annapolis
Department of Public Works
Neighborhood Traffic Control Guidelines

November 1, 2002

PURPOSE: Residents throughout the City of Annapolis, as well as those in neighboring jurisdictions, are often concerned about what they perceive as undesirable high travel speeds in residential areas. This speeding contributes to a sense of uneasiness and in many cases presents unnecessary hazards to residents, pedestrians, and motorists. Although Police Department enforcement may be temporarily effective in lowering speeds somewhat, our experience indicates that longer-term solutions require changing the behavior of motorists. This may be done by effectively reminding drivers to slow down, changing travel patterns, or instituting physical changes which limit the speed at which a motorist may comfortably drive.

These guidelines are intended to provide a general overview of the process which the City of Annapolis uses to address traffic concerns in residential areas. They are not rules and regulations of the Director of Public Works. These Guidelines will be revised and fined-tuned in the future as additional experience is gained.

PROCESS: The process of dealing with a community is as important as the actual plans which arise from the process. Communities which feel that their concerns have not been adequately addressed may oppose plans even though they are demonstrably beneficial. Failure to correctly define and document problems may lead to recommendations that do not address the actual cause of concern.

The Traffic Control and maintenance Division will address any concern (within its area of responsibility) in a professional and timely manner. In most cases, other than routine repairs and slight modifications to traffic controls, it is helpful to deal with representatives of all groups and individuals who are affected by the problem or who may be impacted by proposed solutions. By the same token, large public meetings do not allow for effective communication and discussion. When individual citizens contact the Division with complaints that impact more than just themselves, they should be encouraged to bring their concern to us through an appropriate community organization. Ideally, we would like to work with a group of 5 to 12 persons representing the affected area(s) to study the problem and propose solutions. This might be the Board of Directors of the community association, a public works or safety committee of an association, or an ad hoc committee dedicated to dealing with the specific issue(s). If the citizen who contacts the Division individually is unable or unwilling to work through such a group, Traffic will attempt to make appropriate contacts before or after conducting studies and developing recommendations. Unless the City determines that immediate action is warranted, no major changes in traffic patterns or control will be made without some type of public involvement or notification. (See also the paragraph entitled COMMUNITY INPUT.)

As noted, the study process must be comprehensive and fair. By working with a group of citizens, both of these goals can be achieved. The citizens can provide valuable input into defining the problems and what "the community wants", and their participation in the process can serve to reassure the rest of the community that their concerns were addressed. It is easier to implement changes if members of the affected

community have been a part of the process and will vouch for its integrity. Working with a small group, the process should include the following steps:

1. Define the Problem(s): The group is asked to brainstorm a list of concerns (relating to traffic issues). No one is allowed to dismiss anyone else's concerns as not valid or unimportant. Very often, the community members themselves do not agree on what is wrong. This step makes certain that all of the relevant issues are on the table.

2. Document the Problem(s): The City will collect whatever data is necessary to document the scope of the problem; for example, how many cut-through cars are there? how fast are they going? This data sometimes shows that there is a perception problem, not an actual problem. The documentation may lead to a redefining of the problem.

3. Define Desired Results: Given the actual performance of the roadways, the community is asked to identify what they would like the results to be; how will we know if we have successfully solved the problems? Try to develop goals that can be measured in terms of the data collected earlier.

4. Define Constraints: There may be certain conditions that the community (or City) insists must be met. Examples might include a desire to maintain on-street parking, maintain access to several collector routes, the need to meet the standards of the Manual on Uniform Traffic Control Devices, etc. The constraints may lead to a further redefinition of the problems.

5. Develop Options: Using the information gathered thus far, the City will develop one or more options for consideration. The analysis should attempt to identify the benefits and impacts of each action so that the community understands all of the ramifications. Where there are undesirable impacts, the City will attempt to identify ways to mitigate those impacts.

6. Decide on a Plan: Working together, the committee and the City consider the options. They may decide to recommend one, make modifications, or once again redefine the problem. They may decide that the solutions are worse than the problems, and therefore decide to take no action. This is a valid conclusion so long as all options have gotten fair consideration and there is no overwhelming safety problem that demands City attention.

7. Develop Community Consent: The committee (including the City staff) will report back to the larger community to present its findings and recommendations. The citizen members of the committee can vouch for the integrity of the process, making it easier to reach agreement. On occasion, City staff may also need to obtain approval at the Department or Administration level. Implementation of recommendations will typically require significant community support, in the form of a recommendation by the community association and substantial support of those directly affected by the problem(s) and/or proposed solution(s). (See also the paragraph entitled COMMUNITY INPUT.)

8. Do It: The plan is then implemented.

9. Document the Results: Were the desired results achieved? Should the plan be modified? Should the problem be redefined? The results of this step may lead to closing the project, making a

temporary installation permanent, modifying of actions, or beginning the process over again. In the absence of a serious traffic safety issue which requires City action, we will consider the matter closed once the community is satisfied with the results.

TECHNIQUES: There are a variety of techniques available for use in slowing or diverting traffic. These are described briefly below:

Educational Measures: In many cases, it is the residents themselves who are the primary violators of the posted speed limit. In other cases, thru traffic may not be aware of the impact caused by excessive speeds and/or volumes. The following measures may be helpful in raising drivers' awareness of their driving habits.

- Speed trailer - A self-contained, solar-powered device which displays vehicle travel speeds as determined by a radar gun. The device is housed in a trailer which is set up in a neighborhood for four to five days at a time and operates automatically.

- Citizen Monitoring/publication of speeds - The Annapolis Police Department will loan a radar gun to community organizations after they receive a brief training class. The citizens may record the license number and speed of vehicles on the roadway, and this information can be published in a community newsletter. (The following vehicles were observed speeding on such date, etc.) This can be an effective way to raise the issue within a community, but it may also cause divisiveness within the community.

- Fliers/newsletter articles - Communities may wish to publish articles in their newsletters asking residents to drive more responsibly or create special fliers on the issue. One community took a picture of all of the neighborhood children posing by the community sign and added the caption "28 Reasons Not To Speed in Our Community". This is less confrontational than speed monitoring, but it does not directly present drivers with evidence of their own behavior.

- Demonstrations - Community groups can organize demonstrations along a roadway (such as a sidewalk parade or signs) to encourage drivers to slow down. Care must be taken to assure that the demonstration does not create a safety hazard for pedestrians or drivers, or become confrontational.

- Physical Changes - Most drivers travel at a speed which feels comfortable. By changing the physical characteristics of the roadway, the speed at which they feel comfortable can be lowered. All such changes must be reviewed and approved by Road Operations, Solid Waste, the Board of Education, and Police and Fire Departments before implementation to assure that there is no unacceptable impact to the delivery of their services. In general, physical changes should be designed to accommodate any vehicle which was previously able to use the roadway (albeit at a reduced rate of speed). Diverters and one-way

roadways are obvious exceptions to this goal, but even they can be designed to permit passage by certain vehicles.

- Edgelines - On wide roadways (typically 36 feet or wider), the painting of edgelines can make the travel way appear narrower and thus reduce travel speeds. Generally, the two edgelines are painted 18 feet apart with no centerline. The area outside of the edgelines can be used as a parking lane, bike path, or shoulder area. Consideration should be given to prohibiting parking if there is not sufficient room to park between the curb and edgeline. It is not desirable to have parked cars straddling the edgeline.

- Islands/Circles/Chokers - These are devices which slow drivers by forcing them to maneuver around an object in the roadway. Circles are raised areas within an intersection. Traffic traveling straight through the intersection must pass to the right of the circle. Left turning vehicles may turn left in front of the circle or travel 270 degrees to the right of the circle. (Specific circumstances at particular installations may require prohibiting one of those movements.) Islands are raised areas in the middle of a roadway between intersections. Vehicles in each direction pass to the right of the island. Chokers are raised areas on the outside edge of the roadway which are passed to the left (they mimic a parked car). These devices are typically tested using pre-cast concrete curb sections. This permits modifications (size or shape) to be made easily and allows the community to experience the change before committing to a permanent structure. If the device is successful and the community supports its use, a permanent structure can be installed.

- Multi-way STOPS - The Manual on Uniform Traffic Control Devices (MUTCD), a national standard for the design and installation of traffic control devices, recommends that multi-way STOP signs not be used to control speeding. STOP signs are designed to designate right-of-way, and extensive experience across the country has demonstrated that they are ineffective in slowing traffic. Drivers on the main road soon learn that there is very little likelihood of encountering a vehicle coming from the side street and tend to roll through the intersection without stopping. As a general rule-of-thumb, we expect to see only 25% of the main street drivers come to a complete stop at an unwarranted STOP sign. Half of the drivers typically roll through the intersection at a reduced rate of speed, and the remaining 25% do not slow at all. Under certain specific conditions, multi-way STOPS may be an effective method of controlling an intersection. This generally occurs when there are relatively equal, moderate to heavy volumes on each street. In such cases, multi-way STOPS cause the right-of-way to be shared by both roadways and may prevent conflicts within the intersection. The MUTCD lists specific warrants for the use of multi-way STOPS.

- Diverters - Diverters are channelizing devices which prevent certain movements from being made at an intersection. These can be effective in reducing thru traffic volumes.

- One-way/Do Not Enter Traffic Patterns - ONE WAY and DO NOT ENTER signs can be used to control traffic flows and reduce thru traffic volumes. However, one-way travel patterns may lead to an increase in speeding as motorists do not face opposing traffic which might tend to hold down speeds.

- Rumble Strips - Rumble strips are closely spaced raised bands of material on top of the pavement which cause vibration and noise when driven over. The resulting noise is usually not acceptable in a residential area, and the use of these devices is therefore limited to alerting drivers of particular hazards.

- Speed Humps - A speed hump is an undulation in the pavement surface which causes vertical displacement as a vehicle passes. They are designed to be tolerable at or near the posted limit, but uncomfortable at higher speeds. They typically rise 3 inches in height over a distance of 6 feet and then fall the same height in another 6 foot distance with a ten foot flat section between the rise and fall. Parking lot style speed bumps (typically 6 to 8 inches high, 8 to 24 inches wide) can cause loss of control and will not be used on public roadways in the City of Annapolis.

- Speed humps cause an increase in emergency response time and are somewhat uncomfortable in many vehicles traveling at the posted speed limit. Accordingly, the City of Annapolis has endeavored to avoid an over-proliferation of speed humps by establishing the following conditions:

  1. Speed humps will be installed only after review by the Annapolis Fire Department, Annapolis Police Department, Board of Education and Public Works Services to assure that they will not impose an undue hardship on the operation of fire trucks, school buses, trash trucks, or snow plow equipment.
  2. Speed humps will not be considered on roadways which are classified as arterial or higher function roadways.
  3. Speed humps will not be placed on roadways that are less than 1000 feet long.
  4. Speed humps will generally not be considered on roadways where the average daily volume is more than 10,000 vehicles.
  5. Speed humps will only be considered on roadways where the posted speed limit is 25 or 30 mph. Speed limits will not be lowered solely for the purpose of meeting this criterion.

6. The following volume, speed, and community funding warrants must be met.

If the Average Daily Volume is at least ...	and the Average Travel Speed (50th percentile) is at least ...	Speed humps will be allowed if the Community funds ...
750 vehicles	10 mph above the posted limit	100% of construction
1000 vehicles	5 mph above the posted limit	100% of construction
1000 vehicles	10 mph above the posted limit	50% of construction
1500 vehicles	5 mph above the posted limit	50% of construction

7. On roadways where there is some extraordinary circumstance, the City may decide to fund 100% of the costs of speed humps. These will be evaluated on a case-by-case basis.

8. Except in extraordinary circumstances, no more than six speed humps will be placed along the primary response route between any dwelling unit and the first-responding fire station.

9. The City retains the right to modify or waive these conditions as the City considers necessary or advisable.

- Raised Crosswalks/Intersections - These devices are similar to speed humps in terms of vertical displacement and are used to slow vehicles at crosswalks or intersections. The criteria noted above for the installation of speed humps also apply to raised crosswalks and intersections.

- Roundabouts - A roundabout is (typically) a small traffic circle such as is found in Europe and Australia. All entering vehicles must yield to traffic in the circle (as opposed to Washington, D.C. or New Jersey circles where traffic in the circle is often required to yield to entering traffic). All traffic must move around the roundabout in a counterclockwise direction (as opposed to the speed control circles described above). The principal benefit in using a roundabout is that it allows for more efficient use of the intersection than either STOP signs or traffic signals (in most cases) since very few vehicles are required to come to a complete stop. By limiting the number of conflict points presented to each entering driver, a roundabout will also increase the safety of most intersections. A side benefit of a roundabout is that it will slow thru traffic. However, roundabouts usually can not be fit into an existing intersection without encroaching on the corner lots, so they are often not appropriate for speed control in existing neighborhoods.

- Enforcement: Police enforcement of speed limits can be effective if it occurs consistently over a long period of time. This may not be an efficient use of Police personnel on relatively low volume residential streets, and often leads to community resentment ("How come you're giving the tickets to the residents and not those outside speeders?"). Accordingly, it is often not effective in controlling speeding in residential areas.

The *attached table* lists the criteria which should be considered when selecting what type of action(s) should be considered to control traffic in a residential area.

COMMUNITY INPUT: The City retains the responsibility for its roads and rights-of-way, and has the sole authority to decide whether or not any physical or regulatory changes will be implemented. In the absence of an identified safety problem, however, neighborhood traffic control techniques will not be implemented unless there is substantial agreement and support within the affected communities. Speed humps and other physical changes such as islands, circles, and chokers will only be installed after completion of a Neighborhood Traffic Study and in accordance with City standards regarding type, design, location, and spacing of devices. Specifically, residents must be made aware of the signing and markings associated with speed humps and the possibility that emergency response vehicles will be delayed by 3 to 9 seconds per hump. Depending upon the actual design, similar delays may be expected for circles, islands, and chokers.

The City will not rely on pre-set community approval ratings, but rather will strive to help the impacted community reach general agreement on the nature of the problem and the proposed solution. The assumption underlying this approach is that neighborhoods will support the use of traffic calming techniques (even though they involve some negative impacts) if the citizenry agree that: there is a problem; the proposed solution is the most appropriate; and their concerns have been addressed and mitigated as well as possible. This support will generally be in the form of a recommendation by the community association and the agreement of most of the affected property owners. The definition of "most of the affected property owners" will, of necessity, need to be considered on a case-by-case basis. At the very least, it will include properties near the proposed devices, properties along the road on which the devices are proposed, and properties whose only route of access includes the road on which the devices are proposed, with primary consideration being given to those living in the area directly impacted by the problem and proposed solution. Nearby residents who do not necessarily need to use the route in question should also be notified, particularly where the placement of speed humps in one community may affect the number of humps allowed in another community. Where the implementation of a plan may tend to divert traffic to other residential areas, those areas will also be included in the plan review and approval process.

The City will require proof of community involvement and discussion of any proposed changes. The community must demonstrate that all impacted residents have been made aware of the problem(s) and proposed solution(s) and have been given an opportunity to ask questions, receive answers to those questions, and offer comments. Such proof can be in the form of copies of newsletters/fliers, community meeting minutes, or petitions/ballots.

OTHER AGENCY INPUT: Physical devices such as speed humps, circles, islands, and chokers will generally be placed at spacings of not less than 400 to 600 feet. They will be installed only after review by the Annapolis Fire Department, Annapolis Police Department, Board of Education and Public Works Services to assure that they will not impose an undue hardship on the operation of fire trucks, school buses, trash trucks, or snow plow equipment.

Guidelines for Selection of Neighborhood Traffic Control Techniques

ECHNIQUE	ROADWAY CHARACTERISTICS	TYPICAL VOLUME RANGE (ADT)	SPEED CONTROL ?	EXPECTED SPEED REDUCTION	THROUGH TRAFFIC DIVERSION?	OPEN/CLOSED SECTION ROADS
Speed Trailer	Only one through lane in each direction See Note 1.	500 - 5000	Yes	0 - 3 mph	No	Both
Publication of speeds	Minor collector or below. Residential street with little through traffic. See Note 1.	500 - 5000	Yes	?	No	Both
Fliers/Articles	Any.	500 - 10,000	Yes	?	Sometimes	Both
Demonstrations	Major collector or below with sufficient room to accommodate demonstrators away from roadway surface.	500 - 5000	Yes	?	Sometimes	Both (closed preferred)
Edgelines	Major collector or below with minimum 32' width (or consider parking restrictions).	500 - 10,000	Yes	0 - 3 mph	No	Both
Islands/Circles/Chokers	Major collector or below. Posted Limit <30 mph. minimum 26' width for islands and chokers, minimum 42' diagonal at intersection for circles. See Note 2.	500 - 10,000	Yes	3 - 7 mph	No	Closed
Multi-way STOP	See MUTCD.	See MUTCD	No	0	No	Both
Diverter	Must be an appropriate alternate route.	N.A.	No	N.A.	Yes	Closed
One-Way/ Do Not Enter	Must be an appropriate alternate route.	N.A.	No	N.A.	Yes	Both
Rumble Strips	Any.	500 - 5000	Sometimes	?	No	Both
Speed Humps	Major collector or below. Posted Limit <30 mph. 50 percentile minimum 5 mph over posted limit. See Note 3.	1000 - 10,000	Yes	3 - 7 mph	Sometimes	Both
Raised Crosswalks/ Intersections	Major collector or below. Posted Limit <30 mph. 50 percentile minimum 5 mph over posted limit. May require additional storm drain inlet(s).	1000 - 10,000	Yes	3 - 7 mph	Sometimes	Both
Roundabouts	Any.	1000 - 25,000	Sometimes	0 - 5 mph	No	Both
Enforcement	Major collector or above.	minimum 2000	Yes	0 - 5 mph	No	Both

Notes

1. Requires adequate room for observers and equipment.
2. Requires curbing near device to prevent vehicles from driving around it. Curbing must be placed on open section road to use these.
3. May require curbing near device to prevent vehicles from driving around it.

No documentation.

ADT - Average Daily Traffic MUTCD - Manual on Uniform Traffic Control Devices N.A. - Not Applicable

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